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Preface

POLYMER PRECURSORS FOR THE SYNTHESIS AND PROCESSING OF SILICON CARBIDE NITRIDE MATERIALS

The first literature reports on the use of polymer precursors for the synthesis and processing of silicon carbide nitride (SiCN) materials appeared in the early 1980s as a flurry of research began, directed towards the development of non-oxide ceramic fiber reinforced ceramic composites. The precursor approach to ceramics began a new era in ceramics processing, resulting in the discovery of new phases in the SiCN system and methods of preparing SiC/Si_3N_4 nanocomposites that cannot be accessed by traditional ceramics processing methods. It also led to the use of standard polymer processing techniques for the production of ceramic fiber reinforced ceramic composites. Perhaps the most important discovery was that the introduction of boron (SiCBN) increases the thermal stability of materials produced by temperatures of up to 500 °C without reducing any processing advantages. This special issue is devoted to efforts to delineate the processing and properties of SiCBN materials and to the development of new methods of processing for SiC and SiN type materials.

RICHARD M. LAINE
Professor Materials Science and Engineering Chemistry,
Macromolecular Science and Engineering Center,
University of Michigan,
Ann Arbor, MI 48109-2136
USA